

- Amended*
12. The [monolithic] aircraft roller of claim 7 wherein the polymeric material of the roller is an acetyl copolymer.
13. The [monolithic] aircraft roller of claim 7 wherein the polymer has a compressibility strength of at least 20 psi, impact strength of at least 0.5 ft. Lbs. /in. and flexural strength of at least 20 psi.
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#### REMARKS

This is responsive to the outstanding Office Action issued November 20, 2002. Claims 1-13 were pending in the application. All claims were rejected. All claims have been amended. Applicant believes that application is in a condition for allowance. Applicant respectfully requests notice to that effect.

The oath was stated to be defective for various reasons set forth in the Office Action. A new oath is submitted herewith, addressing the matters noted in the office action. A new inventor has been added conforming with the inventors identified in the provisional patent application. Therefore, applicants believe the objections to the Oath or declaration have been overcome and should be withdrawn. Applicants respectfully request notice to that effect.

The Examiner requested certain information about disclosures the inventors made between the provisional application from which priority was originally claimed and the filing date of the present application. Applicants believe they have fully conformed

with their obligation to disclose any relevant prior art, including any self-generated prior art.

Claims 1, 5, 7 and 9 were rejected under 35 U.S.C. §102(b) as being anticipated by Lawrence et al. (5,655,642). Claim 5 depends from claim 1 and claim 9 depends from claim 7. Claims 1 and 7 have been amended to require the roller be joined to an aircraft and certain physical properties necessary for a roller to properly function on an aircraft. These properties and the importance of them are described in the application. Lawrence appears to be a roller for mining and manufacturing and fails to disclose that it may be used in aircraft or whether the roller is suitable for use in varied climates and is safe in fire situations. Accordingly, applicants believe the rejection under 35 U.S.C. § 102(b). Applicants respectfully request notice to that effect.

Claims 6, 7, and 11 were rejected under 35 U.S.C. §102(b) as being anticipated by Burke (5,542,900). Claim 11 depends from claim 7. Claims 6 and 7 have been amended to require the roller be joined to an aircraft and certain physical properties necessary for a roller to properly function on an aircraft. These properties and the importance of them are described in the application. Burke discloses a roller that is for moving heavy bulk. Burke, however, does not teach that its roller may be used in an aircraft or that the roller has physical properties necessary for functioning in the unique environment of an aircraft. Accordingly, applicants believe the rejection under 35 U.S.C. § 102(b). Applicants respectfully request notice to that effect.

Claims 7, 8, and 10 were rejected under 35 U.S.C. §102(b) as being anticipated by Marcus et al. Claims 8 and 10 depend from claim 7. Claim 7 has been amended to require the roller be joined to an aircraft and certain physical properties necessary for a

roller to properly function on an aircraft. These properties and the importance of them are described in the application. Marcus et al. teaches a roller for use in handling corrosive loads. The concerns related to an aircraft are principally not that of corrosive loads. Marcus does not teach that his roller is suitable in the aircraft environment. Accordingly, applicants believe the rejection under 35 U.S.C. § 102(b). Applicants respectfully request notice to that effect.

Claim 13 was rejected under 35 U.S.C. §102(b) in view of Lawrence or in the alternative under §103(a) as obvious over Lawrence et al. in view of Burke. Claim 13 depends from claim 7. Claim 7 has been amended to require the roller be joined to an aircraft and certain physical properties necessary for a roller to properly function on an aircraft. These properties and the importance of them are described in the application. Neither Lawrence nor Burke (both discussed above) teach joining the roller to an aircraft or that the roller is suitable for use in an aircraft environment. Accordingly, applicants believe the rejection under 35 U.S.C. § 102(b) or alternatively §103(a). Applicants respectfully request notice to that effect.

Claims 1, 4 and 5 were rejected under 35 U.S.C. §103(a) as being unpatentable over Marcus et al. in view of Frost et al. (4,213,523). Claims 4 and 5 depend from claim 1. Claim 1 has been amended to require the roller be joined to an aircraft and certain physical properties necessary for a roller to properly function on an aircraft. These properties and the importance of them are described in the application. Marcus et al., discussed above, does not teach or suggest a roller suitable for use in the aircraft environment. Frost et al. teaches a roller assembly for food processing and the like and does not teach or suggest a roller suitable for use in the aircraft environment.

Accordingly, applicants believe the rejection under 35 U.S.C. § 103(a). Applicants respectfully request notice to that effect.

Claims 2, 3, 11 and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lawrence et al. in view of Burke. Claims 2 and 3 depend from claim 1 and claims 11 and 12 depend from claim 7. Claims 1 and 7 have been amended to require the roller be joined to an aircraft and certain physical properties necessary for a roller to properly function on an aircraft. These properties and the importance of them are described in the application. Neither Lawrence et al. nor Burke teach a roller suitable for use in an aircraft. Accordingly, applicants believe the rejection under 35 U.S.C. § 103(a). Applicants respectfully request notice to that effect.

Claims 8 and 9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lawrence et al. Claims 8 and 9 depend from claim 7. Claim 7 has been amended to require the roller be joined to an aircraft and certain physical properties necessary for a roller to properly function on an aircraft. These properties and the importance of them are described in the application. Lawrence et al. does not teach a roller suitable for use in an aircraft. Accordingly, applicants believe the rejection under 35 U.S.C. § 103(a). Applicants respectfully request notice to that effect.

Claim 13 was rejected under 35 U.S.C. §103(a) as being unpatentable over Marcus et al. in view of Burke. Claim 13 depends from claim 7. Claim 7 has been amended to require the roller be joined to an aircraft and certain physical properties necessary for a roller to properly function on an aircraft. These properties and the importance of them are described in the application. Neither Marcus et al. nor Burke

teach a roller suitable for use in an aircraft. Accordingly, applicants believe the rejection under 35 U.S.C. § 103(a). Applicants respectfully request notice to that effect.

Applicants have prepared and are herewith submitting an affidavit to further evidence the distinction between ordinary rollers and rollers used in aircraft. As highlights, applicants note their experience and that they would not assume, seeing the prior art and aircraft roller (heretofore metal), that they could make a polymeric aircraft roller. Both the FAA and the DER (private sector liaison between a manufacturer and the FAA) were surprised that applicants had invented an approvable polymeric aircraft roller. The testing process and approval process to show that the rollers work lasted for a couple years and applicants making the roller in accordance with the description in this application were able to do so. Applicants have the only approved polymeric aircraft roller.

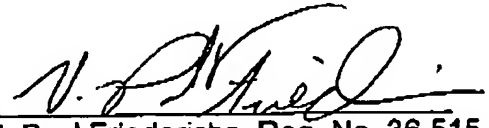
#### CONCLUSION

It is respectfully submitted that that application is in a condition for allowance in view of the present amendments to the claims, oath and the above remarks. Applicants respectfully request the prompt issuance of a formal Notice of Allowance.

Should the Examiner be of the opinion that any minor matters remain to be settled prior to the issuance of a Notice of Allowance, a telephone call to the

undersigned attorney of record is respectfully invited to assure prompt resolution thereof. Counsel may be reached at: (763) 560-0294

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*P.S. Power of Attorney is to add an inventor.*

## APPENDIX A

1. An aircraft roller system comprising:
  - a. a roller adapted to communicate cargo into and out of an aircraft, the roller being cylindrical in shape having a length and a diameter, the roller having a center aperture extending through the length of the roller and the roller being fabricated from a polymer, the polymer having a burn rate of less than 4.0 inches per minute, a compressibility strength of at least 200 psi, impact strength of at least 0.5 (ft.lbs.)/inch, flexural strength of at least 20 psi;
  - b. a shaft in the form of an elongate cylinder having a diameter sized to rotatably fit within the central aperture of the roller, the shaft further having means for retention located upon the shaft ends;
  - c. an elongate "U" shaped roller rack, the roller rack sized to extend the length of the roller and having a pair of upwardly extending ends located adjacent the ends of the roller, each end having an aperture sized to receive the respective shaft end and locate the shaft in a fixed location the rack being joined to an aircraft.
2. The aircraft roller system as described in claim 1 wherein the polymer forming the roller is a polymer select from the group consisting of polysulfone,

polyetherimide, polyetherketone, polyphenylene sulfide and polyvinylidene fluoride.

3. The aircraft roller system as described in claim 1 wherein the polymer forming the roller is an acetyl copolymer.
4. The aircraft roller system as described in claim 1 further comprising a pair of bushings having central openings fitted within the central aperture of the roller and attached to the roller sized to rotatably accept the shaft within their respective central openings.
5. The aircraft roller system as described in claim 1 further comprising a pair of bearings having central openings fitted within the central aperture of the roller and attached to the roller sized to rotatably accept the shaft within their respective central openings
6. An aircraft roller comprising:  
a homogenous roller having:
  - a. an outer housing constructed from a polymer selected from the group consisting of polysulfone, polyetherimide, polyetherketone, polyphenylene sulfide and polyvinylidene fluoride, the polymer having a burn rate of less than 4.0 inches per minute, a



compressibility strength of at least 200 psi, impact strength of at least 0.5 (ft. lbs.)/inch, flexural strength of at least 20 psi;

- b. the outer housing further having a central aperture disposed longitudinally therethrough; and
- c. a bearing located surrounding the central aperture and attached to the outer housing;

a roller rack joined to the roller; and  
an aircraft operably joined to the roller rack.

7. An aircraft roller comprising:

a cylindric roller body, the roller body having a length and a diameter, the roller also having an aperture extending along and through the center of the roller, the roller fabricated from a polymeric material, the polymer having a burn rate of less than 4.0 inches per minute; and  
a cargo aircraft joined to the roller.

8. The aircraft roller of claim 7 further comprising a pair of bushings fitted within aperture of the roller extending inwardly into the aperture of the roller.

9. The aircraft roller of claim 8 wherein the pair of bushing is merged into a single bushing extending through the roller.

10. The aircraft roller of claim 7 further comprising a pair of bearings fitted within aperture of the roller extending inwardly into the aperture of the roller.
11. The aircraft roller of claim 7 wherein the polymeric material of the roller is selected from the group consisting of polysulfone, polyetherimide, polyetherketone, polyphenylene sulfide and polyvinylidene fluoride.
12. The aircraft roller of claim 7 wherein the polymeric material of the roller is an acetyl copolymer.
13. The aircraft roller of claim 7 wherein the polymer has a compressibility strength of at least 20 psi, impact strength of at least 0.5 ft. Lbs. /in. and flexural strength of at least 20 psi.